

~~ATTACHMENT 3~~

**EXAMPLES OF  
STANDARD FAR-OUT NOISE ABATEMENT PROCEDURES**

**Alternative 4 - Cleanup Below 1000' AGL Before Cutback**

- a. Takeoff and climb at an airspeed of  $V_2 + X$  knots until attaining a safe obstacle clearance altitude or at least 500' AGL whichever is higher. I
- b. At an altitude of 500' or above, decrease pitch and accelerate to  $V_{2f}$  while retracting flaps on schedule.
- c. After attaining zero flaps, reduce thrust to not lower than a cutback thrust setting necessary to maintain the takeoff path engine - inoperative climb gradients specified by FAR 25.111(c)(3).
- d. If automatic thrust cutback and automatic thrust advance systems are available, the climb gradients may be reduced to not lower than 0% all engine provided. I

1) It can be shown that it is improbable that the automatic thrust cutback system will fail to set a thrust at least sufficient to maintain a gradient of not lower than 0% all engine.

2) It can be shown that in the event of an engine failure, it is improbable that the automatic thrust advance systems will fail to restore at least sufficient thrust to maintain the engine-inoperative climb gradients specified by FAR 25.111(c)(3) without any pilot intervention, and

3) A GPWS capable of alerting the flightcrew of any descent which occurs below 1,500 feet AGL is installed.

NOTE: An automatic thrust cutback system is not required if the procedure prohibits thrust cutback below 1000'.

- e. Continue climb at an airspeed of  $V_2 + X$  knots at the cutback thrust setting. When clear of the noise sensitive area or at 3000' AGL, set climb thrust and initiate a normal climb profile. I

**Alternative 5 - Partial Cleanup Below 1000' AGL Before Cutback**

- a. Takeoff and climb at an airspeed of  $V_2 + X$  knots until attaining a safe obstacle clearance altitude or at least 500' AGL which is higher. I
- b. At an altitude of 500' or above decrease pitch, and retract flaps to an intermediate (notched) flap setting and accelerate to an airspeed consistent with the intermediate flap setting.
- c. After attaining the intermediate flap setting and an appropriate airspeed for that flap setting, reduce thrust to not lower than a cutback thrust setting necessary to maintain the takeoff path engine-inoperative climb gradients specified by FAR 25.111 (c)(3).
- d. If automatic thrust cutback and automatic thrust advance systems are available, the gradients may be reduced to not lower than 0% all engines provided:
- 1) It can be shown that in the event of an engine failure, it is improbable that the automatic thrust advance systems will fail to restore at least sufficient thrust to maintain the engine-inoperative climb gradients specified by FAR 25.111(c)(3) without any pilot intervention, and
  - 2) It can be shown that it is improbable that the automatic thrust cutback system will fail to set a thrust at least sufficient to maintain a gradient of not lower than 0% all engine. I
  - 3) A GPWS capable of alerting the flightcrew of any descent which occurs below 1,500 feet AGL is installed.

NOTE: An automatic thrust cutback system is not required if the procedure prohibits thrust cutback below 1000'.

- d. Continue climb at an airspeed appropriate for the intermediate flap setting at the cutback thrust setting. When clear of the noise sensitive area or at 3,000 feet AGL, set climb thrust and complete flap retraction on schedule. Establish a normal climb profile.

**Alternative 6 - Cleanup Before Cutback Above 1000' AGL**

- a. Takeoff and climb at an airspeed of  $V_2 + X$  knots until attaining a safe obstacle clearance altitude or at least 1000' AGL whichever is higher. I
- b. At an altitude of 1000' or above, decrease pitch and accelerate to  $V_{2f}$  while retracting flaps on schedule. I
- c. After attaining zero flaps, reduce thrust to not lower than a cutback thrust setting necessary to maintain a takeoff path engine-inoperative climb gradient specified by FAR 25.111(c)(3).
- d. If an automatic thrust advance system is available the engine-inoperative climb gradients may be reduced to not lower than 0% all engine provided. I
  - 1) It can be shown that in the event of an engine failure, it is improbable that the automatic thrust advance system will fail to restore at least sufficient thrust to maintain the engine-inoperative gradients specified by FAR 25.111(c)(3) without any pilot intervention, and
  - 2) A GPWS capable of alerting the flightcrew of any descent which occurs below 1500 feet AGL is installed.
- e. Continue climb at an airspeed of  $V_{2f} + X$  knots at the cutback thrust setting. When clear of the noise sensitive area or at 3000' AGL, set climb thrust and initiate a normal climb profile. I

**ATA PROPOSED  
NOISE ABATEMENT PROCEDURES  
JULY 17,1990**

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**PURPOSE**

To establish a regulatory requirement for pilot actions to achieve standard noise abatement profiles. To accomplish this, two standard profiles are proposed.

**(a) CLOSE-IN [less than 3 nm (nominal)]**

1. Takeoff and climb at an airspeed of  $V_2 + 10-20$  KTS, until attaining an altitude of 1000 ft. above airport elevation (AAE).
2. Aircraft pitch will not exceed manufacturer's recommended maximum pitch attitude required to maintain  $V_2 + 10-20$  KTS.
3. Upon attaining 1000 ft. AAE, reduce thrust in compliance with FAR 25.111 (c) 3. Allow for 1.2% climb gradient (2 engine aircraft), 1.5% (3 engine aircraft) and 1.7% (4 engine aircraft), or 0% climb gradient for aircraft equipped with Auto Thrust Recovery devices and enhanced GPWS. Maintain  $V_2 + 10-20$  KTS and remain in takeoff flap configuration.
4. Continue climb at  $V_2 + 10-20$  KTS until 3000 ft. AAE and clear of noise sensitive area whereupon, set climb thrust, accelerate to  $V_{ZF}$  and retract flaps on schedule.

**(b) FAR-OUT (beyond 3 miles)**

1. Takeoff and climb at an airspeed of  $V_2 + 10-20$  KTS until attaining an altitude of 1500ft. above airport elevation (AAE).
2. Aircraft pitch will not exceed manufacturer's recommended maximum pitch attitude required to maintain  $V_2 + 10-20$  KTS.
3. (High Bypass Engines)  
Upon attaining 1500 ft. AAE set climb thrust, accelerate to the zero flap minimum safe maneuvering speed ( $V_{ZF}$ ) while retracting flaps on schedule  
  
(Low Bypass Engines)  
Upon attaining 1500 ft. AAE accelerate to the zero  $V_{ZF}$  minimum safe maneuvering speed while retracting flaps on schedule and set climb thrust.

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**FAR-OUT (CONTINUED)**

4. Continue climb at  $V_{2T}$  minimum safe maneuver speed to an altitude of not less than 3000 ft. AAE, and initiate normal climb profile.

The selection of a minimum altitude of 1000 ft. AAE provides the following:

1. Increases safety through standardization.
2. Improves noise abatement for communities.
3. Aligns the noise abatement profile with the TCAS Resolution Advisory envelope which provides all escape options at 1000 ft. AGL and above.
4. Establishes a minimum performance standard for each aircraft engine/airframe combination.

*Stage III aircraft provide the highest level of noise technology currently available, consequently, local use restrictions should not be permitted to discriminate against any aircraft which qualifies as Stage III. Airports/communities must not impose noise restrictions which would necessitate thrust cuts below 1000ft.*

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